

GREAT LAKES BIOMASS STATE AND REGIONAL PARTNERSHIP

FINAL REPORT

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Executive Summary

The Council of Great Lakes Governors administered the Great Lakes Biomass State and Regional Partnership (GLBSRP) under contract with the U. S. Department of Energy (DOE). This Partnership grew out of the existing Regional Biomass Energy Program which the Council had administered since 1983. The GLBSRP includes the States of Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio and Wisconsin. The GLBSRP's overall goal is to facilitate the increased production and use of bioenergy and biobased products throughout the region.

The GLBSRP has traditionally addressed its goals and objectives through a three-pronged approach: providing grants to the States; undertaking region-wide education, outreach and technology transfer projects; and, providing in-house management, support and information dissemination.

At the direction of US Department of Energy, the primary emphasis of the GLBSRP in recent years has been education and outreach. Therefore, most activities have centered on developing educational materials, hosting workshops and conferences, and providing technical assistance. This report summarizes a selection of activities that were accomplished under this cooperative agreement.

Program Overview

The Council of Great Lakes Governors administered the Great Lakes Biomass State and Regional Partnership (GLBSRP) under contract with the U. S. Department of Energy (DOE). This Partnership grew out of the existing Regional Biomass Energy Program which the Council had administered since 1983. Since their inception, these two programs have brought over \$13 million in federal money into the region which was matched by over \$25 million in State and private funds. The GLBSRP includes the States of Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio and Wisconsin.

The GLBSRP worked in cooperation with four other regional organizations to form the National Biomass State and Regional Partnership. The overall objective of the Partnership is to encourage increased production and use of biomass (basically any organic material) for energy generation. The Partnership focuses on outreach, education and technical assistance activities to meet this objective. The Partnership provides grants to the States; undertakes region-wide education, outreach and technology transfer projects; and, provides in-house management, support and information dissemination.

The biomass program began by concentrating on the use of wood and waste products for energy through combustion to produce steam, heat and electricity at commercial and industrial sites. While these are still important issues, the program focuses increasingly more attention on the development of locally produced renewable transportation fuels including ethanol, biodiesel and E-diesel as well as municipal and on-farm biogas production.

Goals and Objectives

The GLBSRP's overall goal was to work cooperatively with the US DOE Office of Biomass Program to facilitate the increased use of biofuels, biopower, and biobased products through coordinated federal, regional, and State outreach, education, and technical assistance programs.

The GLBSRP operated following the objectives developed by the national Biomass State and Regional Partnership in its annual Statement of Work and approved by US DOE as follows:

- Work cooperatively with other Partnership members on a set of goals that achieve associated milestones and results;
- Facilitate closer communication and encourage greater coordination among federal, regional and State biomass and bioenergy activities;
- Provide leadership in addressing policies and technical issues in order to advance the use of biomass and utilization of biomass technologies at the highest levels of State government;

- Strengthen and maintain regional partnerships with other federal agencies, the States and stakeholders to help develop biomass as a potential and significant contribution to the Nation's energy portfolio;
- Create awareness and support among States for US DOE programs such as biomass special project grants under State Energy Program (SEP) and work closely with the US DOE regional offices to find the areas where biomass activities cross-cut with other EERE programs such as: Clean Cities, Industries of the Future, Federal Energy Management Program (FEMP), distributed energy and hydrogen;
- Provide an effective communication conduit for States and US DOE to identify and address biomass issues of mutual interest; and
- Maximize use of DOE and State funding through resource sharing.

Additional objectives specific to the GLBSRP include:

- Provide information, technical and other assistance to enable the increased use of bioenergy and biobased products;
- Mitigate barriers to the development and deployment of bioenergy and biobased products; and
- Facilitate the development and deployment of cost-effective bioenergy and biobased products.

Program Plan

Since the inception of this program in 1983, the GLBSRP has addressed the above objectives through a three-pronged program.

First, a State grant component provided funding to each of the seven GLBSRP member States to increase the capabilities of the State energy offices in the field of biomass energy. The GLBSRP issued subgrants to the States to facilitate activities between the State energy offices and other State agencies in addressing State-specific biomass energy issues. Throughout the years, this has represented the largest segment of the program and, consequently seen the largest expenditure of program funds. States used these funds for a variety of activities including hiring specialized staff, conducting workshops and special events, providing technical assistance, producing educational materials, and other actions designed to increase the production and use of bioenergy in each State.

The second component of the regional partnership provided subcontracts for projects with a region-wide benefit. These focused on a wide range of issues including biomass energy information, technical assistance, technology demonstrations, environmental assessments and economic analyses. Through this component, the GLBSRP also helped sponsor a number of national and regional conference. Private developers, not-for-profit corporations,

universities, States and other non-federal organizations received project funding through this competitive process.

Lastly, the GLBSRP sponsored some activities that were performed in-house by regional partnership staff members. The staff provided extensive technology transfer activities, including presentations and displays at meetings and workshops, distribution of publications, sponsorship of regional conferences, and working with potential biomass energy users. The staff also maintained a website that provided information about the program and its member States, a publication listing, general bioenergy information and links to other sites of interest.

Because of limited funding provided by US DOE during the timeframe covered by this cooperative agreement, the recent focus of the GLBSRP has been on the State and in-house components of the program. The activities undertaken through the regional component were much more limited than during previous funding cycles.

Program Management

In addition to the above activities, the Council of Great Lakes Governors (CGLG) was responsible for the management, oversight and operation of the GLBSRP. CGLG's specific responsibilities included:

- Program planning including the development of resource plans, annual operating plans and program budget consistent with public law and funding authority. Program planning is conducted according to national program guidance;
- Program financial management;
- Funding GLBSRP activities;
- Program oversight, review, and performance evaluation including the daily management of the GLBSRP and its related contracts, grants and cooperative agreements. One aspect of this was to assure that all subgrantees adhered to all applicable federal rules and regulations.

Primary program management was conducted under the auspices of the CGLG Executive Director. The GLBSRP Director undertook the program planning and daily program management with the assistance of the CGLG's Administrative and Policy Assistants and Financial Manager.

A Steering Council provided guidance to the Project Director on overall project management. The role of the Steering Council was to assist in the selection of projects and in the preparation of Requests for Proposals (RFPs), to advise the Project Director on specific program activities and set basic program guidelines. The Steering Council also assisted the program by coordinating interagency cooperation and in carrying out technology transfer activities to the public. The Steering Council usually met in person once or twice per year and had a conference call meeting every four to six weeks.

Activities and Accomplishments

As described in the Program Plan above, the GLBSRP planned to undertake a wide variety of activities to promote bioenergy on the local, State, regional, and national levels. While it would not be practical to list every activity and accomplishment conducted under this cooperative agreement, the examples that follow show how the GLBSRP achieved its primary goal of facilitating the increased use of biofuels, biopower, and biobased products through coordinated federal, regional, and State outreach, education, and technical assistance programs. Specific examples of activities and accomplishments are presented under the three components of the above Program Plan. Several collaborative projects undertaken by the GLBSRP with the other members of the National Biomass State and Regional Partnership are also presented.

State Subgrants

The GLBSRP's annual grant to the States has been used in a variety of ways. In some States, it has been used primarily to retain staff that is knowledgeable about bioenergy and bioproducts to provide information and technical assistance to citizens throughout their State. In other States, the funds have been used to undertake a specific project or to produce a specific product. Each of the seven States in the Great Lakes region performed dozens of activities through this cooperative agreement. Following are representative examples of activities in each of these States.

Illinois

The Illinois Department of Commerce and Economic Opportunity (DCEO), host for the Illinois Biomass Program, has conducted a wide variety of outreach activities including; hosting a series of teacher education workshops designed to introduce an alternative fuels curriculum into elementary and secondary classrooms throughout the State; hosting workshops aimed at informing and educating Illinois' dairy, swine, and other livestock operations about methane production and power generation from livestock manure; sponsoring, in conjunction with the Chicago Area Clean Cities Coalition, a series of free Biodiesel Fuel Quality Seminars intended to educate stakeholders in the biodiesel industry on how to best achieve acceptable standards for fuel; and co-sponsoring and co-hosting the Midwest Alternative Energy Venture Forum in Chicago.

The Illinois Biomass Program, partnered with the National Energy Education Development Project (NEED) to prepare and distribute K-12 classroom materials designed to educate students, educators, parents and the public about ethanol production, use and environmental impacts. These groups then developed a workshop series for educators about renewable fuels. These workshops, along with the new curriculum produced for them, will help educators learn more about using renewable resources to run our cars and buses. Participants learn about ethanol, biodiesel, and other fuels, while

participating in many hands-on activities. Through a grant from the GLBSRP, these workshops were replicated in all member States.

Indiana

The Indiana State Department of Agriculture and the Indiana Office of Energy and Defense Development (OED) are partners in the State biomass program and have developed a number of conferences including a workshop to disseminate information about methane digestion and CHP applications using the resulting biogas; and the Ethanol Leadership Summit to create E85 leadership at the local level focusing on the purchase of Flexible Fuel Vehicles for local fleet vehicles and how to make E85 available to those vehicles.

Indiana's Biomass Program has also been an active participant in the development and promotion of the community of Reynolds, Indiana, as "BioTown, USA." The long-term goal of this project is for all of the community's energy needs (including electricity, natural gas replacement and transportation fuel) to be met by locally grown and produced bio-renewable resources rather than foreign sources of fossil fuels. The Biomass Program has developed and installed an orientation/educational exhibit for the on-site visitors' center.

In addition, the program provided grants that focused on project partnerships among local and regional organizations, researchers, industry, utilities and government. These partnerships helped to increase the role of biomass in Indiana's energy mix, implement cost-effective biomass energy technologies and promote private and public sector investments. The program has also been instrumental in developing an E-85 (85% ethanol) refueling infrastructure throughout the State.

Iowa

The Iowa Biomass Energy Program, which had been housed in the Department of Natural Resources (DNR), has recently moved to the newly created Office of Energy Independence. The Program has had an emphasis on farm and rural development issues and convened a series of meeting and other outreach efforts to promote Farm Bill 9006 to Iowa farmers and rural small businesses and provided application assistance to those who chose to submit applications. These efforts resulted in 47 applications of which 37 were funded.

The Program has been involved in a number of projects to promote and market the use of methane derived from on-farm anaerobic digestion of manure. Among these projects is the coordination of the Audubon County Economic Development Corporation, other State agencies and stakeholders to develop a community digester. Audubon County has the second largest concentration of swine in Iowa and its intent is to use the digester both as an energy resource and a means for addressing environmental concerns. Attendees at a recent series of meetings included representatives from Iowa DNR; Iowa economic development, livestock and agriculture producer groups; food and meat processing industries; Iowa State University Extension; and, local utilities.

The Iowa Program also developed a web-based anaerobic digester asset-mapping tool to help identify potential sites for the production of energy from biogas and conducted a series of workshops and other outreach efforts to further the development of on-farm biogas production facilities. The Program also collected information and completed an “Iowa Toolkit” for the “Development of Workable Incentive Systems for Biobased Products, Biofuels and Biopower” project.

The Program also presented “Wood-to Energy: Iowa Wood By-Products Workshop,” bringing together wood by-product generators, wood energy end users, fuel pellet producers, entrepreneurs, industrial wood energy users, utilities, and State facilities end users of wood.

Michigan

The Michigan Biomass Program, in the Department of Labor and Economic Growth, has developed and funded numerous workshops from their GLSRBP State grant, including The German American Chamber of Commerce Conference to promote biofuels; The Greater Lansing Area Clean Cities Coalition Advancing the Choice Event to educate legislators and their staff on the benefits of increased biofuels use; and the Harvesting Clean Agri-Energy Conference which focused sessions on both bioenergy generation and biofuels and for the agriculture industry.

The program also published a report entitled, “Clean Energy from Wood Residues in Michigan,” discussing the potential for using wood residues as an energy feedstock in Michigan. Program staff also participated in a Statewide study to catalog and examine all industrial and commercial boilers within the State to determine their potential to be retrofitted or replaced to use wood-fuel including locally generated wood wastes.

The Michigan Biomass Program, along with the Michigan Parks and Recreation Division, helped support the dedication and grand opening of the Cedar River State Harbor and Marina. Funds were used to develop a tabletop display; write press releases; develop, print and distribute brochures on marine biodiesel use; develop a slide show for use in the boaters’ lounge; conduct a survey of boaters that used biodiesel fuel; and, other activities related to grand opening festivities. Boaters were also offered coupons as an incentive to try biodiesel. This is the first marina in the State to have a B5 blend of biodiesel available.

Minnesota

The Minnesota Biomass Energy Program, part of the Department of Commerce, helped develop the BioEnergy Business Conference held in Minneapolis and designed to open a dialog for partnership between the U.S. and Germany in developing and implementing new bioenergy technologies.

The program also contracted with the University of Minnesota to conduct a year long drivability evaluation of vehicles fueled with 20 percent ethanol (E20) in preparation of Minnesota’s requirement that on August 30, 2013, gasoline in the State of Minnesota

contain 20% ethanol by volume. The positive results of this study are being used by a wide range of organizations nationwide to promote the use of higher blend ethanol.

The Minnesota Biomass Energy Program contracted with The Center for Rural Policy and Development to conduct a study examining the economic development potential of biomass energy technology in rural Minnesota. Together they hosted a meeting of officials from throughout the region to better understand how neighboring States view this potential and to exchange ideas on developing policies that encourage rural economic development through bioenergy production.

Ohio

The Ohio Biomass Energy Program, within the Public Utilities Commission, provides leadership in Ohio to facilitate State policy and incentives for bioenergy use; increased bioenergy awareness; increased bioenergy development; and, the use of federal funding opportunities. Program staff participates as a principal in Ohio Biomass Task Force planning meetings and serves on the Central Ohio Clean Fuels Coalition/Clean City program project development committees. The program also hosted the Ohio Biomass Task Force workshop, with over 150 participants, to promote the USDA Renewable Energy Systems and Energy Efficiency Improvements grant program and other State incentive programs for renewable and energy efficiency development projects in the State.

The Ohio Biomass Energy Program is one of several among the Great Lakes States that produce a Biomass Energy Newsletter that highlights State, regional and national activities, available resources and funding opportunities. The newsletter is available in hard copy or on line and complements the Ohio Biomass Energy Program website. The program has also developed an educational display that was used at events such as the 46th Farm Science Review, hosted by the Ohio State University and the Ohio Agricultural Research and Development Center.

Also, Ohio Biomass Energy Program staff works closely with utilities throughout the State to encourage the use of biomass for electricity production. For example, they helped develop Duke Energy Ohio's green pricing option, *GoGreen*.

Wisconsin

The Wisconsin Biomass Program, located in the State's new Office of Energy Independence, conducts a wide range of activities including providing technical assistance; managing Renewable Energy Assistance Program (REAP) grants that are funded by the Oil Overcharge Program; providing public information through the *Wisconsin Energy News*, the *Wisconsin Renewable Energy Yellow Pages*, and other information outlets; building a database of Wisconsin's biomass supply and use including GIS data input and analysis; and, working with other State agencies and power producers to increase the use of biomass energy in the State.

Program staff has assisted with creating a trade organization focusing on the needs of the emerging biodiesel industry in Wisconsin. The group has established a Steering

Committee and a number of issue-based committees – Policy, Transportation and Logistics, Education, and Financial that meet monthly.

The biomass program works closely with other State offices and organizations to promote various aspects of bioenergy throughout the State. For example, along with Wisconsin's Agricultural Innovations Center they hosted an Ag Venture Fair focusing on the emerging bioeconomy intended for farmers, industry professionals and potential investors. And, they continue to assist the Department of Agriculture, Trade and Consumer Protection to develop monthly meetings of the Wisconsin Biogas Development Round Table. These meetings are an informal gathering of industry, government, non-profits, and individuals interested in learning more about on-farm anaerobic digestion for power.

In order to prepare the market for customer-based biomass through the Wisconsin Focus on Energy project, program staff helps administer a number of programs that affect biomass energy use including financing, technical assistance, business and marketing assistance and demonstration.

Regional Contracts

Resource Strategies Inc. of Madison, Wisconsin, prepared an Agricultural Biogas Casebook, for the GLBSRP. This casebook presents profiles of farms using anaerobic digesters (AD) for animal manures in the Great Lakes States. Its purpose is to provide a picture of the current state of on-farm AD use in the region. Dairy, hog, and poultry farms that use the biogas for heat and power are profiled. The summary information provided in these profiles can help those considering using AD technologies to make informed choices and provide a general improvement in implementation efficiency and operator success. By sharing their experiences, these "pioneers" may help service providers better understand the needs of their customers and aid potential operators to make a smooth transition to using biogas systems. This casebook has been well received by energy, farm bureau, and resource conservation and development offices throughout the region. It has also been the basis for presentations at numerous State, regional and national conferences.

On four separate occasions, the GLBSRP was a principal sponsor of the Conference on Renewable Energy from Organics Recycling, presented by BioCycle magazine. For several years, this was the only major conference held in the US that dealt with all types of biopower, biofuels, and bioproducts. Each of the sponsored conferences was held in a GLBSRP State including Wisconsin, Iowa, and Illinois. Each annual conference attracted over 250 participants. GLBSRP Director Fred Kuzel made presentations at each conference and also served on the conference planning committee. Several GLBSRP-supported projects were presented during the breakout sessions of these conferences. The GLBSRP also had a display at the Conferences that highlighted the National Biomass State and Regional Partnership.

The GLBSRP cosponsored a national meeting hosted by the Governors' Ethanol Coalition and EPA Region 7. The meeting was designed to assist State environmental regulators in better understanding the issues surrounding the permitting of new ethanol production facilities. Among the topics covered were air quality rules, community involvement, water quality issues and State permitting processes. The Illinois Biomass Program staff was the principal organizer of the meeting.

Minnesota Statute 239.791 requires that on August 30, 2013, gasoline in the State of Minnesota shall contain 20% ethanol by volume. The State of Minnesota has contracted with the University of Minnesota to conduct a yearlong drivability evaluation of vehicles fueled with E20. The GLBSRP is supplying additional support for the project. The vehicle test fleet consists of 80 university fleet vehicles comprising 40 pairs of similar vehicles with similar usage patterns. Based on recommendations from the USEPA, 40 vehicles are being fueled with E0 and 40 vehicles with E20. Drivers filled out daily logs sheets indicating any drivability problems that might occur. The contractor converted these qualitative assessments into quantitative drivability scores similar to those given by professional raters. Trained raters also evaluated the drivability characteristics of 20 of the vehicles on a test track in Arden Hills, Minnesota. These results were compared with similar testing undertaken in the fall and winter and will be presented in the final report. Results indicate that the vehicles fueled with E20 outperformed those with straight gasoline during the warm months, but had poorer performance during the cold months. No mechanical problems due to usage of E20 have been reported. The study concluded that although some differences in performance were observed between vehicles fueled by E0 and E20, the differences were small, inconsistent and not statistically significant. Minor mechanical failures occurred but they are not believed to be fuel-related. The difference between the fuel consumption of matched pairs of E0 and E20 vehicles was very small and not statistically significant. In summary, no significant differences between paired E0 and E20 vehicles were observed in drivability, reliability, or fuel economy. The final report was completed and is available on the Minnesota Department of Agriculture website at <http://www.mda.State.mn.us/renewable/ethanol/default.htm>

In-House Staff Activities

Annually, the GLBSRP hosted an informational/educational exhibit highlighting ethanol, biodiesel, on-farm biogas and other biomass energy opportunities at renewable energy fairs in three Great Lakes States:

- The Midwest Renewable Energy and Sustainable Living Fair held annually in June in Custer, Wisconsin. This grass-roots fair draws over 20,000 people annually from around the country and internationally. It has become the largest event of its type in the world and the GLBSRP has participated in every fair since its inception.
- The Illinois Renewable Energy Fair held annually in August in Oregon, IL.
- The I-Renew Energy Expo held annually in central Iowa in September.

The GLBSRP also hosted exhibits and displays at a number of other State, regional, and national forums including:

- The inaugural “Real World Application of Renewable Energy Trade Show and Conference” held in Mt. Pleasant, Iowa. The event was sponsored by the Henry County Convention and Visitors Bureau as part of an economic development strategy for southeastern Iowa.
- Four BioCycle Renewable Energy From Organics conferences.
- Two Power-Gen Renewable Energy Conferences held in Las Vegas, Nevada.
- The National Bioenergy & Wood Products Conference in Denver, Colorado, in 2006.
- US EPA’s National AgStar Conference held in Madison, Wisconsin, in 2006
- The Quad City Conservation Alliance’s 2008 Environmental Fair which drew more than 25,000 people to Rock Island, Illinois. The primary emphasis of this exhibit was ethanol and biodiesel production and use within the Great Lakes States.
- The University of Iowa Energy Expo held in 2008 on the University campus in Iowa City, Iowa, which was attended by many students and faculty members.

GLBSRP Director Frederic Kuzel was invited to speak at a wide variety of conferences, workshops and other events. Some of these included:

- A Biomass Energy Symposium at the Chicago Center for Green Technology attended by professionals from various federal and municipal offices and private organizations.
- A graduate-level class at the Illinois Institute of Technology in Chicago. This annual lecture on biomass energy technologies was part of a course that investigates a variety of renewable energy options and was a great opportunity to introduce ethanol, biodiesel, anaerobic digestion, co-firing and other advanced Bioenergy options to a group made up primarily of future engineers.
- Four BioCycle Renewable Energy From Organics conferences.
- The National Bioenergy & Wood Products Conference held in 2006 in Denver.
- The 2007 Innovations Conference on Asphalt and Traffic held in Peoria, Illinois. The mission of the conference is to develop a network of business executives, policymakers, and scholars from around the United States and to promote partnerships between industry, education and government for the overall improvement of the nation’s transportation systems. Bradley University was the primary sponsor of the conference.
- The “SmallWood 2008 and Bioenergy & Wood Products” conference held in Madison, Wisconsin. The GLBSRP Director had served on the Steering Committee that planned and organized this national conference which was sponsored by the USDA Forest Service and the US Department of the Interior.
- The Peace Corps Fellows Fall 2008 Workshop held at Western Illinois University in Macomb, Illinois, where he emphasized how bioenergy projects can stimulate rural economic development.

The GLBSRP hosted periodic stakeholder conference calls to discuss bioenergy issues and outreach activities. Participants included staff from State energy offices, State agriculture offices, public utility commissions, USDA Rural Development offices, and related non-governmental offices from throughout the region. A key element of these calls was an “around-the-table” presentation from all participants to report on activities in each State as well as to highlight upcoming activities. Several of the calls also included webcasts, allowing participants to view PowerPoint presentations on their computers via the Internet. Webcasts included presentations on the Farm Bill Section 9006 funding opportunities, the USDA Value-Added Producer Grant program, the Conservation Security Program of the Natural Resources Conservation Service, and other subjects of interest. Between calls, the GLBSRP kept this stakeholder group informed by distributing the monthly National Biomass Partnership Summary of Activities as well as sending regular emails outlining upcoming events, funding opportunities and other news of note.

Representatives from the Great Lakes States also participated on regular conference calls of the Great Lakes Biomass Emissions Resource Group. The GLBSRP was instrumental in forming this group whose purpose is to address common issues related to emissions from biomass energy processes, especially those related to permitting and emissions requirements in the States. The group also worked to develop an emissions factor database.

The GLBSRP Director served on the planning committee and on the Policy Working Group of the North Central Regional Biomass Feedstock Partnership to develop a workshop which was held in 2006 in Sioux Falls, South Dakota. This region includes five States from the Great Lakes area. The North Central Feedstock Partnerships is organized and cosponsored by the US DOE and the Sun Grant Initiative to facilitate the development of biomass resources to help reach the US DOE’s goal of utilizing one billion tons of biomass for fuels and power.

The GLBSRP Director was invited to serve on the Executive Committee for the 2007 Energy Transition 2050 Conference, a Midwest renewable and sustainable energy conference held in Chicago in the spring of 2008. The conference was managed by the Energy Center of Wisconsin with funding from the Joyce Foundation.

National Biomass Partnership Collaborative Projects

The GLBSRP is part of the National Biomass Partnership, a collaboration of five long-standing regional biomass energy programs that encompasses all 50 States, two U.S. territories and the District of Columbia. This Partnership has taken on activities that have a national significance as guided by a committee comprising representatives of the Council of Great Lakes Governors and three other convening Governors’ organizations, State representatives and the National Association of State Energy Officials (NASEO).

One activity was recently completed for the Partnership by The Antares Group--the development of an Excel spreadsheet for estimating biofuel, ethanol and biodiesel production. Developed in response to a request from the United States House of Representatives' Committee on Agriculture, this information will be useful to many people interested in learning about the potential for the production of biofuels. The Excel spreadsheet is a useful tool for estimating the biofuels production potential for both ethanol and biodiesel from a number of different feedstocks. The ethanol component examines the potential from corn and several cellulosic feedstocks including switchgrass, corn stover, wood waste and energy crops. This spreadsheet can also be used to estimate biodiesel potential from soybean oil and several types of waste grease. It does not include all feedstocks such as small grains like barley or wheat, nor does it include other oil seed crops. The interactive spreadsheet allows the user to choose a State, region or any grouping of States to automatically generate results both graphically and in table formats.

Another joint project was the development of a bioenergy technology selection matrix. The matrix is designed to provide users with a quick method to conduct a preliminary selection of technologies for specific bioenergy applications and to provide clarity and direction to potential bioenergy users. The technology matrix is an online summary of the different types of biomass-to-energy conversion technologies. It can be used to determine which technologies are most appropriate given a specific feedstock to be used, end products to be produced, and the commercial availability of the technologies. The Technology Matrix, which is one of several tools developed by the National Biomass Partnership, can be found at www.nrbp.org/bioenergy.

The Partnership also developed a series of web-based forums on subjects ranging from issues from food versus fuel to on-farm energy development. These webinars provide vital and up-to-date information from experts in their fields to a broad audience without the expense or time required to travel to on-site presentations. The most ambitious of these was a National Forum on Cellulosic Ethanol. The Partnership convened this day-long web-based Forum as a means of providing current and objective information to State energy officials and others on the status of cellulose-to-ethanol techniques and the future prospects for ethanol. A panel representing the ethanol, automobile, small engine and petroleum industries also discussed the expanded role ethanol will play in implementing the Renewable Fuel Standard.

Conclusions

In 2006, the US DOE directed the National Biomass Partnership to develop metrics that would measure success for the Great Lakes region and the other four Partnership regions. The Antares Group was retained to undertake this project.

The contractor measured four key outcomes expected from the successful work of the Partnership: State policies favorable to biomass; increased bioenergy awareness (as

measured by development of University Curricula and private or public training programs); leveraging federal funding and State resources; and increased bioenergy development intensity.

Using these four metrics, the contractor concluded that in the Great Lakes region as a direct result of activities and actions undertaken by the GLBSRP, there was a 8.5% increase in the effectiveness of State policies to encourage development of biomass resources in 2005 compared to 2003; an estimated \$101M in investments in biomass were made in the 2003 to 2004 reporting period, with State and private funding accounting for over \$72.6 Million, nearly tripling federal funding; and, total installed and operational bioenergy production *capacity* increased by 12% from 2003 to 2004.

The report further concluded that the Partnership is particularly influential because of its direct connection to the region, and understanding of individual State's feedstocks and bioenergy emphasis; that the development of State program was significantly assisted by the Partnership's research and informational activities; and, that the Partnership's continuing presence helped to educate the partners in the States and created an important link between the State contacts.

Based upon this independent study, it is clear that the GLBSRP met its stated goals and objectives delineated under this cooperative agreement with US DOE.